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The Construction and Application of the SPOC Blended Teaching Model of College English under the Concept of Maker Education

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Abstract: *The accelerated development of technological revolution and industrial change has created a new ecological environment for language learning, and the social demand for comprehensive and applied talents has made new demands on university English teaching. Based on the concept of Maker education, this article develops a SPOC blended teaching model of university English and applies it to teaching. 136 learners of an English course in a university are taken as the research object, and the application effect of the developed teaching model is verified and analyzed. The results show that the model has a significant influence on improving students' English language application ability, learning motivation, teacher-student interaction and learning interest.*

Keywords: *Maker Education; SPOC; Blended Learning; College English*

1. Introduction

As information technology advances and higher education becomes more accessible, many colleges and universities are exploring innovative educational models and technological tools to improve both the quality of teaching and student learning. One such model that has attracted considerable attention is the SPOC, which combines the strengths of online and traditional face-to-face instruction. In addition, insights from Maker education have enhanced this blended teaching approach.

Currently, English courses in higher education primarily use traditional face-to-face instruction, which can lead to problems such as low classroom efficiency, limited hands-on experience, inadequate language use skills, low student engagement, and poor employment prospects. Therefore, developing an effective teaching methodology to improve students' learning outcomes and innovativeness in English courses at these institutions is an important topic in current research on English language teaching.

In this study, a blended teaching approach based on SPOC is proposed for English courses in higher education institutions, which combines the advantages of online and traditional face-to-face teaching. The emphasis is on active student participation, developing hands-on experiences, and fostering creativity. This model incorporates elements from creativity education that can help foster students' creative skills and practical experiences while supporting their ability to practically apply what they learn. In this way, it can improve both the quality of English language instruction in higher education and students' learning outcomes, ultimately increasing their competitiveness in the labor market.

To test the effectiveness and feasibility of this proposed teaching method, this study uses an empirical research approach that observes and analyzes real teaching practices.

2. Related Concept

The term "Maker" refers to individuals who bring ideas to life and share them with others. Makers are continually innovating, practicing, and openly sharing their work. They are a promising educational model to nurture innovative talent and support alternative educational pathways. The concept of Makers is promising, both as a novel educational model to foster various forms of innovative talent and as an alternative way to foster innovative education. It is driven by high public expectations to transform and potentially challenge traditional educational practices [1]. According to Mark Hatch [2], the concept of Maker education revolves around miniaturizing information and condensing knowledge

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for active application. Halverson and Sheridan [3] also emphasize the intentional design of Maker activities to achieve learning objectives, pointing to the alignment with school practices. Maker education, or "making as learning," aims to counteract the limitations of standardized teaching and testing. It fosters a climate that enhances student creativity, innovation, and individual development. This is consistent with student-centered and personalized approaches that emphasize hands-on skills, creativity, and interdisciplinary thinking. As a result, Maker education provides a solid foundation for college English.

Rapidly developing “Internet+” technology is having a major impact on higher education, including teaching methods. Blended teaching, combining online and offline elements, has emerged as the dominant approach. Massive Open Online Courses (MOOCs) guide learners to creatively organize information resources and independently explore knowledge. MOOCs support problem solving through negotiation and dialog and stimulate the generation of new knowledge [4]. On the other hand, Small Private Online Courses (SPOC) leverage MOOC technology platform and resources. SPOC integrate online and offline teaching for specific groups of students within a school, effectively combining the advantages of both methods. SPOC have the potential to improve teachers’ regulatory capacity, learners' success rate, mastery of material, and participation [5]. They also contribute to informal learning outside the traditional classroom and are consistent with the concept of the flipped classroom. Through participation in online activities such as viewing course videos, submitting assignments, peer assessments, and group discussions, SPOC addresses the limitations of the traditional teaching and promotes active learning habits, creative thinking, and application skills. However, more research is needed to explore the full potential of this blended teaching model. Therefore, this study aims to investigate the effectiveness of SPOC blended teaching model in students' English learning through empirical research.

3. Construction of the SPOC Blended Teaching Model of College English under the Concept of Maker Education

The widespread use of digital technologies, such as the Internet, in education has created new demands for innovative teaching methods and models, and set new standards for students’ skills. With the rapid advancement of science and technology, this trend has become increasingly prevalent.The traditional model of education has deficiencies in training the innovative and linguistic skills of students, which are critical to meeting the demands of modern society. To counter this, higher education needs to focus on developing students' language application skills, digital literacy, innovative spirit and comprehensive problem-solving skills. Consequently, the goals for building a teaching model for the SPOC blended teaching approach in college English in higher education should include the following:

- Collaboration between teachers and learners in mutual growth: according to Gabriella [6], teachers’ competence and expertise play a crucial role in integrating educational concepts at all stages of education. Fostering a sense of mutual growth is increasingly important in the teaching and learning process. Peer assessment, as highlighted by Lai [7], facilitates mutual learning and effective interaction among learners. In this model, a learning community of teachers and students promotes collaborative learning, assessment discourse and mutual support. Teachers and students work together to design and implement the instructional process, fostering an atmosphere of cooperation and collaboration. The teacher leading the learning community encourages independent learning and active exploration, promoting innovative thinking.

- Promoting practical use of language: Through the use of project design and task-based approaches, this model ensures that students are exposed to specific real-life contexts and scenarios that enable them to apply the English skills they have acquired in practise. In this way, students develop their oral and written communication skills while sharpening their ability to use the language effectively in practical situations.

- To improve motivation to learn and the ability to learn independently, it is important to design stimulating and challenging tasks that arouse students’ interest. Active student participation in setting goals and personalized learning plans promotes autonomy and motivation for independent learning.

- Innovation skills can be developed through project-based learning, where students are encouraged to develop creative ideas and come up with novel solutions, fostering their innovative thinking and problem-solving skills. To cultivate their entrepreneurial spirit, students should be motivated to actively engage in practical applications, experiment and further research.

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▪ Fostering interdisciplinary competence involves integrating knowledge and skills from different disciplines into project design. Collaborative learning and teamwork are crucial in this process as they promote critical thinking and a comprehensive understanding of different fields and strengthen students' interdisciplinary skills.

The ability to work in teams is crucial in Maker Education as it emphasizes collaborative learning. By participating in group projects and team tasks, students can hone their teamwork and communication skills. Students are encouraged to use their strengths, promote collaborative problem solving and develop their teamwork and leadership skills. In line with the above objectives, the SPOC blended teaching model for university English was developed according to the Makers' concept, which is shown in Fig. 1

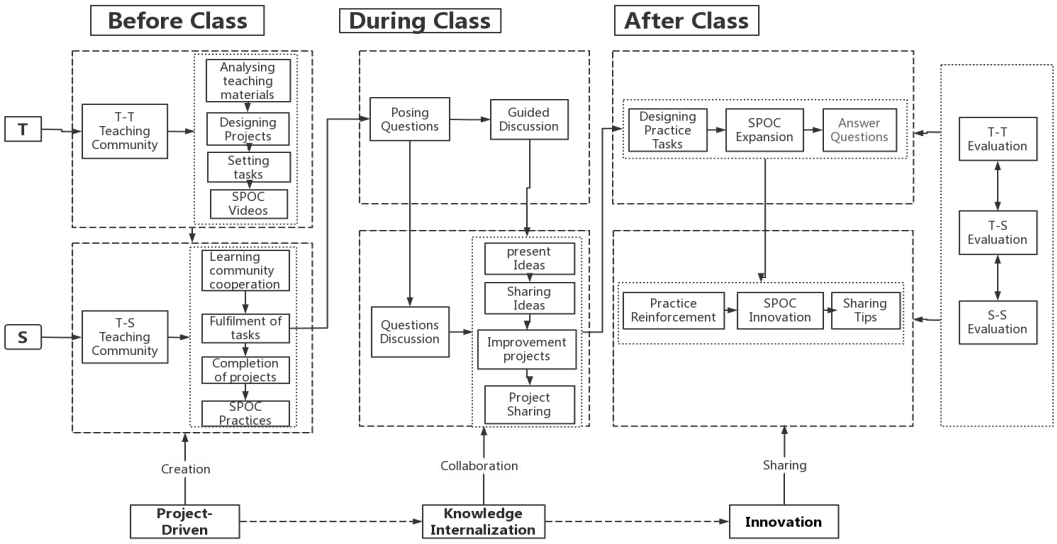

Fig. 1: SPOC Blended Teaching Model of College English under the Concept of Maker Education.

▪ Pre-Class - Project Driven

Before class, we form a teacher-teacher learning community and a student-student learning community. The teacher-teacher learning community analyzes and deconstructs the textbook content and develops appropriate projects that provide students with hands-on scenarios. These projects are divided into multiple tasks to facilitate independent learning. Students are provided with SPOC videos to help them overcome any difficulties. Through active participation in the learning community, teachers continually hone their pedagogical and digital skills. Once students receive their assigned tasks, they form learning communities to work on the tasks together in small groups. This collaborative process allows them to complete the assignments incrementally, eventually culminating in the completion of the project and the use of SPOC. Students also present their collaborative presentations both online and offline as an integral part of the project.

▪ While-Class - Knowledge Internalization

The teacher assesses both the progress and outcomes of students' projects by compiling and analyzing them to identify recurring issues. During class, the teacher facilitates discussions and asks questions to provide assistance. Once issues are resolved, the teacher arranges for students to revise and improve their projects and select specific projects to share and present. During this process, students engage in independent discussions to resolve the issues. In this way, the flip teaching model is implemented and greater student participation is encouraged. In this way, a student-centered and teacher-led classroom environment is created. As students tackle problems, their motivation to learn moves from passive to autonomous, sharpening their problem-solving skills and fostering innovative thinking and entrepreneurship in each assignment.

▪ After-Class - Innovation

Teachers conclude the lesson by designing relevant practice tasks that align with students' learning. These tasks serve to reinforce knowledge gained and promote further learning through the use of SPOC. At the same time, students consolidate their understanding by integrating SPOC resources and sharing

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their learning experiences on the platform. This interaction not only increases their motivation to learn, but also allows for valuable feedback for pedagogical and technological improvements.To create a more social and interactive environment in the classroom, several assessment methods are used, including teacher assessment, instructor assessment, and student assessment. These methods include features such as likes and comments that not only make the learning process more fun, but also encourage greater engagement between teachers and students.

4. Application of the SPOC Blended Teaching Model of College English under the Concept of Maker Education

In order to evaluate the effectiveness and feasibility of the teaching model implemented in the college English, the following section provides a thorough analysis of the experimental data and specific results from the experiments.

4.1 Research Design

4.1.1 Research Target

A total of 136 students from four parallel classes at a university in Anhui Province were selected as study participants to take part in the experiment. By applying the cluster sampling method, these 136 students were divided into two different groups: the control group and the experimental group. Specifically, the control group (consisting of 69 students) and the experimental group (consisting of 67 students) were formed. It is important to emphasis that both groups received the same instruction from the same teachers, used the same textbooks, and had the same class time.

4.1.2 Research Content and Process

The four parallel classes used uniform teaching materials and completed identical teaching tasks. The control group followed a traditional teaching approach, while the experimental group implemented the college English SPOC blended teaching model, which emphasizes the concept of Maker. The study used a mismatched control group pre-test-post-test design that involved an initial pre-test assessment, followed by instruction based on the intended teaching model, and concluded with a post-test and subsequent data analysis to draw experimental conclusions. The entire experimental process spanned 16 weeks and included 48 hours of teaching, the entire duration of the course.

4.1.3 Measuring Tools

The study used a number of assessment tools to measure learning outcomes, including three questionnaires to assess Motivation to learn (M), Effective Interaction (E), and Study Interest (I), as well as Language Skills (S) in the form of a test paper. Previous research by Peach [8] showed a positive correlation between academic achievement and learning outcomes, suggesting that high-achieving learners tend to show greater commitment to the course. Therefore, examination tests were used to assess the effectiveness of teaching and learning. A national standardized exam paper were used to test language proficiency, while teaching effectiveness was assessed through a summative assessment. The observation tool used was a questionnaire distributed in offline at the end of the semester, which allowed for anonymous collection of feedback.

For the development of the Teaching Effectiveness Questionnaire, the basic dimensions were derived from the theory of learning dimension theory proposed by Prof. Knud Illeris, a Danish psychologist, who focused on student feedback to assess teaching effectiveness. According to Knud, learning can be understood in terms of three broad dimensions: Motivation, Content, and Interaction. Building on these dimensions, the questionnaire included four core dimensions: 'Motivation and Attitude toward Learning',” 'Effective Interaction',” and 'Study Interest'. Each dimension included 5-6 questions, for a total of 16 questions. Responses to the questions were designed on a four-point scale with varying scores of 3, 2, 1, and 0, with 3 representing "strongly agree," 2 representing "generally agree," 1 representing "difficult to judge," and 1 representing "difficult to judge." 3 for "completely agree," 2 for "mostly agree," 1 for "difficult to judge," and 0 for "do not agree at all." After the questionnaire was devised, we conducted a preliminary survey with 5 students from each experimental group, 15 students in total, to ensure the validity of the questionnaire. Based on the feedback results, the relevant experts were asked to suggest changes, and the questionnaire was revised.

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4.2 Experimental Results

During the 16-week experiment on college English teaching experiment, several procedures were conducted according to international academic standards. First, questionnaires were distributed in all four classes. A total of 136 questionnaires were distributed, all of which were successfully scored. Then, a national standardized exam paper was used for summative assessment, collecting 136 test scores, all of which were duly accepted. After retrieving the data, we conducted a compilation and analysis of the data. Finally, the data from the two groups were subjected to independent testing using SPSS 24.0, as shown in Tables 1 and 2.

Based on the results shown in Table 1, no significant differences were found between the control group and the experimental group in terms of Learning Motivation, Effective Interaction, Learning Interest, and Learning Skills ($p > 0.05$). This indicates that there were no significant differences between the experimental and control classes in all aspects before the experiment began.

Table 1: Pre-test Independent Sample T-Test

	Control Group(N=69)	Experimental Group(N=67)	T	P
M	1.01±0.849	1.09±0.996	-0.472	0.637
R	1.55±1.105	1.42±1.103	0.701	0.484
E	1.13±0.999	0.91±1.034	1.265	0.208
S	70.246±9.388	70.448±8.775	-0.129	0.897
	**p<0.01 *p<0.05			

M = Study Motivation; R = Effective Interaction; I = Study Interest; S = Learning Skills

Table 2: Post-test Independent Sample T -Test

	Control Group(N=69)	Experimental Group(N=67)	T	P
M	1.01±0.813	1.91±1.055	-5.535**	0.000
R	1.59±1.034	2.15±0.942	-3.271**	0.001
E	1.14±1.088	1.78±1.126	-3.325**	0.001
S	71.304±7.691	74.746±8.274	-2.514*	0.013
	**p<0.01 *p<0.05			

M = Study Motivation; R = Effective Interaction; I = Study Interest; S = Learning Skills

Based on the results presented in Table 2, remarkable differences were found between the control group and the experimental group in terms of Learning Motivation, effective interaction, learning interest, and learning skills ($p < 0.05$). In terms of learning motivation, the experimental class had a mean of 1.91, while the control class had a mean of 1.01. The T-value of -5.535 indicates statistical significance at a significance level of 0.05. Similarly, for teacher-student interaction, the experimental class had a mean score of 2.15, while the mean score of the control class was 1.59. The T-value of -3.271 passed the significance test at the 0.05 level. As for learning interest, the experimental class scored a mean of 1.78, while the control class scored a mean of 1.14. With a T-value of -3.325, the significance test was also passed at the 0.05 level. Finally, regarding learning skills, the experimental class had a mean of 74.746, while the control class recorded a mean of 71.304. The T value of -2.514 also exceeded the significance test at the 0.05 level. These observations are clear evidence of a significant discrepancy between the experimental and control classes, indicating that the experimental group performed better than the control group. Analysis of the pre- and post-test data demonstrates that incorporating the SPOC blended teaching model for college English within the concept of Maker education significantly improves the effectiveness of college English teaching.

5. Discussion of Results

5.1 Make full use of the concept of Maker education to boost student participation

Active participation in teaching and learning activities helps students see the value of learning. Extensive research by Pascarella [9] demonstrates the positive impact of student engagement on learning outcomes. Maker education offers students with numerous opportunities to innovate and participate in real-world projects. With the help of SPOC, they have easy access to a variety of learning resources, tools, and targeted instruction that promote active engagement in collaborative learning. This process increases overall engagement, international perspective, creativity, innovation, and appreciation of hands-on knowledge among students.

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5.2 Enhancing Students' Learning Regulation through SPOC: Enhance the interactivity, socialization, and practicality

▪ Interactivity: According to the constructivist theory, social interaction plays a crucial role in the learning process [10]. By providing various scenarios for students to interact with, the SPOC platform facilitates the construction of meaningful knowledge and promotes the development of individual and group wisdom. To further enhance this process, real-time online discussion and interaction features can be introduced. These features allow students and teachers to communicate and share their views instantly, which increases the interaction rate between them and promotes greater student participation in the teaching and learning process.

▪ Socialising and entertaining: Encourage student participation in online project presentations and exhibits by incorporating social media features such as commenting, liking, and sharing. Use online collaboration tools for effective communication and collaboration among students. Gamification elements such as leaderboards and challenge tasks can be introduced to encourage competition and engagement and make the course more enjoyable. Also, provide a platform for sharing multimedia materials and communication between students and teachers to share learning resources and experiences to facilitate socialization and hands-on learning.

▪ Practicality: Enhancing Students' Learning Regulation through the SPOC platform. Compared to MOOCs, SPOCs offer a more focused approach that effectively extends the concept of targeted teaching from the traditional classroom. This makes them a valuable tool for promoting student-centered learning. SPOCs provide students with ample opportunities for independent learning, while offline activities facilitate practical application and output, ensuring a comprehensive student-centered learning experience. To further improve student perceptions of teaching quality, it is important to optimize teaching tools and provide robust technical support both online and offline. By facilitating collaboration between students and instructors, the platform encourages active engagement and a sense of ownership in the learning process. To achieve this, the initial focus should be on improving the interactive, social, and fun nature of the course.

SPOC blended teaching mode in college English, with the concept of Maker education, enhances students' interest, initiative, and innovative thinking. It offers abundant learning resources, perspectives, and collaboration, leading to higher satisfaction. However, further improvement is needed, such as increasing data volume, in future studies.

5.3 To ensure effective teaching, a variety of rich learning resources are provided.

Firstly, the course content is carefully compiled to ensure reliability and practicality. This includes authoritative learning materials and real-life case studies, as well as a range of multi-dimensional resources such as tutorials, classroom examples and practical projects to meet different learning needs. Secondly, content is presented in diverse and engaging formats, including text, images, audio and video. This ensures accuracy, depth and attractiveness and caters to the preferences of different learners. Thirdly, innovative teaching technologies and tools such as virtual labs and online simulation environments are introduced. These enhance the students' learning experience, encourage active participation and stimulate their interest in learning.

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